Markets for Wood Products from Durable Hardwood Sawlog Plantations

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Abstract

In a world of increased forest reservation and environmental regulation of native forest harvesting, supplies of naturally durable timbers continue to fall short of traditional market demand, opening the door for imports, preservative-treated less durable species, alternative non-wood materials or other design solutions. However, these options have not fully satisfied the marketplace, and market values and demand for naturally durable timbers have continued to climb.

The opportunity now exists to establish plantations to meet both traditional and expanding high-value market demands for naturally durable species.

The challenge is to grow these species in viable plantations that produce the required mix of products throughout the rotation and still deliver sufficient returns to maintain their relevance in an increasingly competitive investment marketplace.

This paper describes current and emerging markets for timber of naturally durable species that could increase the attractiveness of establishing plantations of purpose-specific durable hardwoods.

Introduction

Hardwood *Eucalyptus* and *Corymbia* plantations have been planted in many countries around the world, mainly to meet demands for fuelwood and fibre for paper and other reconstituted products. By economic necessity, these products have been produced from fast-growing short-rotation plantations. More recently in Australia there has been a focus on managing hardwood plantations for higher-value products such as structural timber, flooring and rotary-peeled veneer. These efforts have still essentially focused on faster-growing and higher-pulp-yielding hardwood species suitable for selected sites. However, the versatility of durable hardwood species, which can be directed to a wide range of end products, is being increasingly recognised as an opportunity to minimise future market risk.

Markets for naturally durable timber products continue to be met from the sustainable harvesting of native forests. These timbers are recognised for their unique natural characteristics, particularly in relation to their durability, but also often for their strength and appearance as well as some specific fit-for-purpose uses. While timbers that exhibit some durable characteristics naturally occur in each state of Australia, the forests where most of these species naturally occur are found in New South Wales (NSW) and Queensland.

Over the last twenty years in these states, increased forest reservation and environmental prescriptions for native forest harvesting operations have substantially reduced sustainable supplies of many of these naturally durable timbers. Efforts to either reproduce or replicate this durability through imports, chemical treatments, alternative materials or other means have not fully satisfied the market, and so both demand for and market values of the naturally durable timbers have continued to climb.

It is in this environment that investment in plantations of naturally durable timber, involving longer rotations, begins to become more financially attractive. That said, a few high-priced products at the final harvest won't override the necessity to have in place a fundamentally sound plantation operation including land acquisition, site and species selection, establishment, silviculture, pruning and economic management. Nonetheless, high-value markets for all of the products from thinning and final harvest will help to underpin the financial viability of longer-rotation hardwood plantations in Australia, and add to any returns on investment that may be realised through taxation, carbon and other benefits.

This paper does not attempt to describe or solve the many challenges that must be faced in growing durable, longer-rotation hardwood plantations economically. Rather it seeks to identify the range of markets that currently or potentially exist for durable hardwoods that could assist investment in such plantations to meet increasing high-value market demand.

Background

While this paper will focus on markets for wood products from hardwood plantations of naturally durable species, chemical timber treatments to increase durability cannot be ignored. Indeed, chemical preservative treatment of sapwood in hardwood logs will serve to enhance the performance of both naturally durable and less durable hardwood timber species.

Bootle (1983) identified in-ground durability classes for all the major timber species in Australia. These classes range from most durable (Class 1) to least durable (Class 4). For the purposes of this paper 'durable' will refer to Class 2 or better according to AS5604 2003 (Standards Australia 2003).

Table 1. A list of the major Class 1 and 2 commercial hardwood timber species, their classifications and a rough indication of current availability (low (L), medium (M), high (H))

Common name	Species	Class	Availability
Grey box	*Eucalyptus microcarpa*	1	M
Red bloodwood	*Corymbia gummifera*	1	L
Steel box	*E. rummeryi*	1	L
Grey gum	*E. propinqua* *E. punctata* *E. longirostrata*	1	M
Broad leaved ironbark	*E. fibrosa*	1	L
Grey ironbark	*E. paniculata*	1	M
Narrow leaved red ironbark	*E. crebra*	1	L
Red ironbark	*E. crebra*	1	L
Gympie messmate	*E. cloeziana*	1	L
Sugar gum	*E. cladocalyx*	1	L
White mahogany	*E. acmenoides*	1	M
Turpentine	*Syncarpia glomulifera*	1	L
Tallowwood	*E. microcorys*	1	M
Blackbutt	*E. pilularis*	2	H
New England blackbutt	*E. andrewsii*	2	M
Spotted gum	*C. maculata*	2	H
White stringybark	*E. eugenioides* *E. globoidea*	2	H
Red mahogany	*E. resinifera*	2	L
Yellow stringybark	*E. muellerana*	2	M
River red gum	*E. camaldulensis*	2	H

Table 1 lists the major Class 1 and 2 commercial hardwood timber species and their current availability. Of the species listed, only blackbutt, spotted gum, sugar gum, Gympie messmate and yellow stringybark are grown in plantations of any scale, and not all are under long-rotation regimes. In a global sense, the available durable resource either in native forest or in plantations is a small fraction of the non-durable one, and it is expected that the comparative value of naturally durable timbers will continue to climb in future.

In NSW, for example, Forests NSW has established up to 30 000 ha of hardwood plantations that are a mix of species best suited to individual site and location parameters. Just over 50% consists of Class 1 and 2 durable species, but less than 5% of the total are Class 1. A profile is provided in Figure 1.

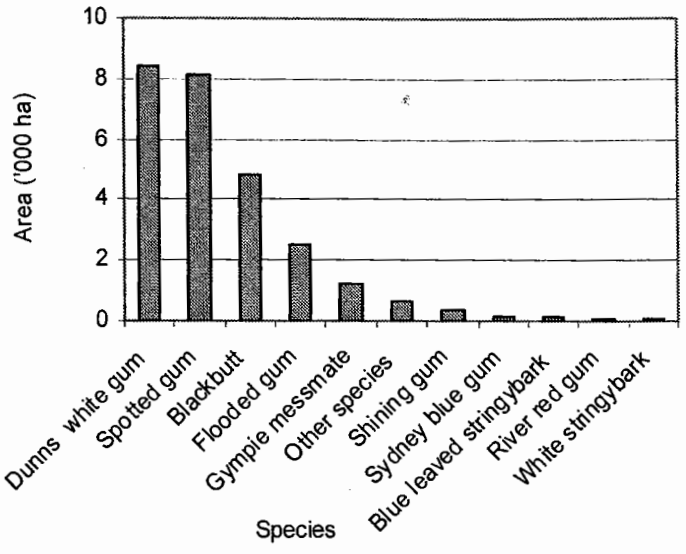

Figure 1. Areas of Forests NSW hardwood plantation species

Table 2. Progeny trials and seed orchards established by Forests NSW

Species under tree improvement		Seed orchards established	Elite seed available
Common name	Species		
Gympie messmate	*Eucalyptus cloeziana*	2008	2011
Sugar gum	*E. cladocalyx*	2008	2011
White mahogany	*E. acmenoides*	2008	2011
Blackbutt	*E. pilularis*	2002	Now
Spotted gum	*Corymbia maculata*	2008	2011
White stringybark	*E. globoidea*	2008	2011
Red mahogany	*E. resinifera*	2008	2011
River red Gum	*E. camaldulensis*	2004	2008

A comprehensive profile of hardwood plantations established for sawlogs in other states is not provided in this paper, but it is understood that these estates are smaller and have a similarly small proportion of durable species.

Another feature of these long-rotation plantations is that they have predominantly been established for the production of small sawlogs of maximum diameter about 40 cm.

This has effectively removed any possibility of producing large round and end-section sawn timbers that have formed a large part of the traditional market for durable species.

Considerable research is being conducted to determine best management arrangements, wood properties and markets for these species, with progeny trials and seed orchards already established by Forests NSW for species listed in Table 2.

Some of these trials have identified species with considerable growth potential, and further research on tree form is likely to provide significant results. Other operational plantation trials for Class 1 durable hardwood species, particularly some of the ironbarks, have delivered mixed results, and the slower growth of these species has challenged their commercial viability to date.

Understanding the particulars of growing some plantations over the longer rotations necessary to produce larger round and end-section timbers will undoubtedly require further research, but to obtain the earliest possible results and to take advantage of the current investment environment, this effort should commence now. The opportunity also exists for further research on the particulars of establishing, managing, harvesting, processing and marketing of durable species.

Markets for durable timbers

Naturally durable hardwood timbers often have other strength and appearance characteristics that assist in securing specific market shares. The focus of this paper is on durability characteristics, but discussion of suitable markets will often include reference to these other characteristics. Markets for durable hardwood timbers can be divided into three groups: round timbers, sawn timbers and residues.

Table 3. Traditional products from roundwood timbers

Product	Use	Processing
Poles	Specialist building and construction, electricity and telecommunications transmission	Debarking, length docking, chemical preservative treatment, boring, capping and hardware attachments
Poles (small)	Currently directed to export markets in SE Asia for electricity and telecommunications transmission	Debarking, length docking, chemical preservative treatment, boring, capping and hardware attachments
Piles	Wharfs, bridges, building foundations	Debarking (when preservative treated but not for naturals), chemical preservative treatment (double treating, CCA and creosote) for marine use north of Jervis Bay and Perth, capping, boring and jointing
Girders	Rural road or rail bridge maintenance and replacement (including heritage items)	Debarking (sometimes), facing or squaring, boring and jointing
Landscape uses	Playgrounds, retaining walls and other garden uses	Variety

Round timbers

Round timber markets usually rely on the durability and strength of log lengths with minimal processing. Chemical preservative treatment of the sapwood of these timbers plays a major part in their durability in use, as it creates an enveloping barrier that can technically continue to maintain performance of the product long after any naturally durable heartwood degrades. In addition, treatment effectively increases the size of the pole as in untreated poles only the heartwood can be used for performance calculations. Their specialty use and relatively low processing cost contribute to their high value. Examples of traditional products are listed in Table 3.

These products offer plantation growers considerable possibilities due to their relatively high value and also because the level of investment in processing technology (usually involving maintenance of preservative treatment capacity) is not excessive and does not require large-scale resources to ensure economic viability.

Sawn timbers

Markets for sawn durable timbers are important for plantation utilisation as not all log products harvested will lend themselves to round timber markets. Sawn timber markets usually rely more on the natural durability of the timber as preservative treatment is less effective in the heartwood of hardwood species. Examples of traditional products are listed in Table 4.

Some durable timbers are also suitable and currently used for rotary-peeled and sliced-veneer products such as decorative and construction plywood, laminated veneer lumber and decorative furniture, flooring and other appearance-grade products. Durability is generally not a key requirement in these applications, although some product development is known to have been undertaken on the use of plywood for pole products that may rely on some durability features.

Pulpwood residues

Equally as important as all the above products, particularly to plantation-management economics, are markets for log products produced at thinnings and final harvest other than those described above, and also sawmilling residues. Traditionally, markets for residues from plantations have been heavily focused on paper, cardboard and reconstituted panel products, each requiring high-pulp-yielding species. This has been a major contributor to the current choice of species planted in short-rotation plantations. The fact that most of these markets are based overseas has also influenced the location of these plantations on sites within economic transport distances of key Australian port facilities.

Table 4. Traditional products from sawn timbers

Product	Use	Processing
Cross arms	Electricity transmission	Sawn, bored
Bridge timbers	Road and rail, chords, decking, struts, braces etc.	Sawn, bored, jointed
Rail timbers	Sleepers, turnout timbers	Sawn, some chemical sapwood treatment, bored
Wharf and marine timbers	Wharf bearers and decking, oyster stakes	Sawn, bored
Dried and dressed structural	Construction, flooring and other applications requiring strength characteristics of durable species	Sawn, seasoning and profiling/planing
External cladding, screenboards, external architectural use	Residential or commercial building and construction	Sawn, some seasoning and profiling/planing
Decking/boardwalks	Residential or commercial decking and boardwalks. Note: Most durable species are also suitable in fire-prone areas.	Sawn, some seasoning and profiling/planing
Exposed external beams	Specialist external construction for strength, appearance and durability	Saw, bored, jointed
Rural and fencing timbers	Fencing, gates, stockyards, rural construction, vineyard posts	Sawn, splitting, some chemical sapwood treatment
Landscape and firewood	Retaining walls and other garden uses, commercial or residential firewood	Sawn, splitting, some jointing

Residues from durable hardwood species have usually been less suitable for these purposes, but a number of products and markets are available. Markets for residue products will help to ensure the economic viability of establishing plantations of durable hardwoods, both directly through their market value and indirectly through the reduction in plantation re-establishment costs associated with windrowing and burning. Examples of products from residues are listed in Table 5.

Table 5. Products from residues

Product	Use	Processing
Hardboard and cladding products	Panel products, house and fence cladding, packaging	Woodchipping, pulping, heat and pressure processing
Stranded composite timber and boards such as oriented strand board (OSB) and similar products	Essentially panel and composite timber products for construction, shipping and packaging	Woodchipping, flaking, peeling, heat and pressure processing, gluing
Biofuels, bioenergy, biomaterials	Woodchips or pellets for stand alone or co-generation of heat or electricity Cellulosic fuels for ethanol or other volatiles New products for textiles, packaging foams, or other products not traditionally wood based.	Variable—woodchipping, grinding, pulping, drying, heat and pressure, pelletising, pyrolysis, gluing
Charcoal, activated carbon	Silicon production, metallurgy, food preparation, heating/energy	Sawing, controlled burning
Craftwood	Commercial or domestic furniture, artistic or feature items	Variable
Extractives	Oils, perfume components, resins, pharmaceuticals, nutraceuticals, acylphlroglucinols (medicines)	Billeting, crushing, other

Average prices for durable timber products

Market prices for each of the durable timber products described above need to be considered in the context of current prices and forecast prices.

Current prices

Estimated current average prices per product are listed in Table 6.

Table 6. Current average prices for timber products

Product	Description	Price range
Round timbers		
Poles	Thinnings and plantation clearfall: Smaller export treated poles to large Durability Class 1 and 2 transmission poles (8 m to >20 m in length)	$30 per pole to $1200 per pole (about $60–$220 m^{-3})
Piles	Thinnings and plantation clearfall: Full size range 11 m to >18 m, Durability Class 1 and 2. Note: Foundation piles tend to be smaller, i.e. similar to export poles	$130–$300 per m^3
Girders	Mostly plantation clearfall: <30 cm sed to >40 cm sed, particular demand and value for Class 1 >50 cm sed, Durability Class 1 and 2. Note: Large (>50 cm) girders are used to produce sawn girder material, not in the round.	$170–$450 per m^3
Landscape uses	Thinnings and plantation clearfall: Smaller (down to 7 m) and other specialist hardwood poles	$130–$160 per m^3
Sawn timbers ($ per cubic metre)		
Cross arms	Mostly plantation clearfall: Mostly Durability Class 1	$1800–$2000
Bridge timbers	Mostly plantation clearfall: Large-end-section, mostly Durability Class 1. Generally require girder-quality logs with sed of >50 cm	$1800–$3000
Rail timbers	Mostly plantation clearfall: Large-end-section, Durability Class 1 and 2	$1800–$3000
Wharf and marine timbers	Mostly plantation clearfall: Large-end-section and decking, Durability Class 1 and 2	$2000–$3000
External cladding, screenboards, external architectural use	Thinnings and plantation clearfall: Mostly Durability Class 1 and 2	$1200–$1600
Decking	Thinnings and plantation clearfall: Mostly Durability Class 1 and 2	$900–$1400
Exposed external beams	Mostly plantation clearfall: Large-end-section, Durability Class 1 and 2	$1200–$1800
Rural and fencing timbers	Thinnings and plantation clearfall: Posts, rails and palings, Durability Class 1 and 2	$1400–$2000
Landscape	Thinnings and plantation clearfall: Durability Class 1 and 2	$500–$800
Appearance-grade flooring (Appearance and strength properties)	Thinnings and plantation clearfall: Durability Class 1 and 2	$1000–$2500
Structural—F22, F17 and F27 (Appearance and strength properties)	Thinnings and plantation clearfall: Durability Class 1 and 2	$900–$1800

Table 6. **Continued**

Product	Description	Price range
Residues ($ per tonne)		
Hardboard cladding and related products	Thinning and clearfall residues	$600–$800
Stranded composite timber and boards such as oriented strand board (OSB) and other similar products	Thinning and clearfall residues	$400–$600
Biofuels, bioenergy, biomaterials	Thinning and clearfall residues	$20–$30
Charcoal	Thinning and clearfall residues	$400
Craftwood (MDF particleboard)	Thinning and clearfall residues	$400–$500 per m^3
Extractives	Thinning and clearfall residues	

Forecast prices

Movements in price in domestic timber markets have historically been cyclical in nature, largely in response to changes in the level of building activity. More recently some of this dependency has been removed in the hardwood timber sector through diversification of products and markets, but some cyclical tendency remains. Nonetheless, timber prices for high-quality durable timbers continue to increase over time, at least keeping pace with the Consumer Price Index.

Currently the domestic timber market is emerging from a downturn which has prevailed for the last three to four years. This recovery, consistent with general industry understanding and recognised industry forecasts (BIS Shrapnel and the Housing Industry Association) predominantly rests on the back of considerable pent-up demand in markets for dwelling construction and increases in alterations and additions, and is expected to escalate from late 2007–early 2008. In addition to this, world pulp market prices continue to remain strong and are pulling through value in all woodchip and residue products.

While the overall increase in timber market demand identified above is likely to bring industry-wide benefits of volume and unit prices, market opportunities for durable timbers will continue to specifically relate to the ability of timber marketers to match their unique characteristics with end-user demands. These are reasonably well defined for most sawn timber products, and traditional marketing strategies relating to pricing, position, promotion and placement/delivery of the products are equally as relevant to durables as to non-durables.

In addition, the scarcity of some traditional timbers—for example preferred sizes for timber poles and large-end-section bottom chords for timber bridges—has seen prices for these specific items escalate substantially beyond previous expectations, making the pursuit of these markets highly attractive. These 'scarcity' drivers are expected to remain for the long term and to underpin future increases in unit prices.

Market development and demand

General market prospects and demand

Since about 2006 world-wide concerns over global warming and greenhouse issues have significantly escalated the market awareness of consumers. Purchasing decisions are now being made with a high interest in possible impacts on the environment.

Comparatively, timber products stand to rise to the top of consumer preferences over traditional competitive products such as steel, concrete, plastic and aluminium because of low energy usage in production processes and appropriate favourable whole-of-life-cycle assessments.

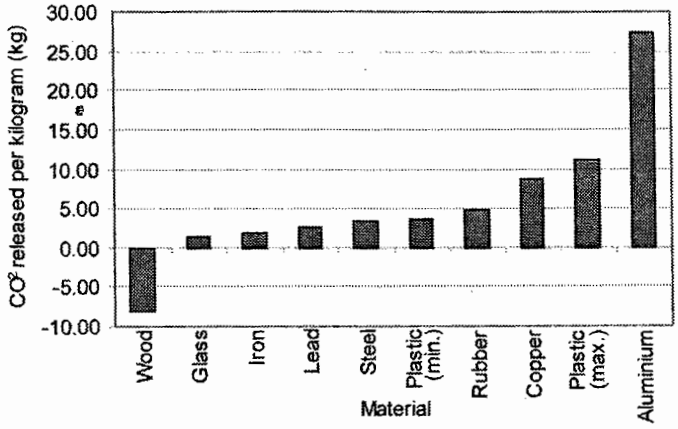

Figure 2. Amount of CO2 released during manufacture per kilogram of product (Source: Forests NSW)

Plantation investors and the timber industry have the distinct advantage of being representative of the only one of these materials sequestering significant amounts of atmospheric carbon in the production process, giving them a head start over their competitors. Strategic marketing and product positioning campaigns will still be required, but this feature—together with the renewable, environmentally sustainable, certifiable and reusable or recyclable nature of plantation-produced products—is expected to generate significant market demand for timber products in both traditional and non-traditional markets for the foreseeable future. Figure 2 indicates the comparative amounts of CO_2 emitted during the manufacture of a range of building and construction materials.

Governments and large corporations are early movers in this debate, and industries with high greenhouse gas emissions are already scrambling to gain ascendancy in media, marketing and offsetting strategies. This is particularly relevant for durable timber demand as governments are largely responsible for the utilities that require much of the durable round and large-end-section timber products described above.

Key market movements

In addition to the above-mentioned indications of general market growth, key specific market movements that may be more beneficial in the longer term for durable hardwood plantations can be found—in round timber applications such as poles, as well as in large-end-section bridge and rail timbers, external building and architectural applications and products re-constituted from forest and mill residues.

Poles

Australia appears to be well placed to service unmet or under-supplied market demand for smaller electricity transmission pole products in the Philippines and South-East Asia. Current treated hardwood pole supplies to these markets from Koppers Wood Products Pty Ltd Australia are facing considerable pressure from very competitively priced steel and concrete poles from China, as well as the effects of recent increases in shipping costs.

Treated pole products from thinnings of durable eucalypt plantations could meet the required dimensions and specifications, and offer potentially superior performance to these alternative products. Opportunity therefore exists for Australian producers to meet this demand in the longer term.

Domestically, a recent study commissioned by the Energy Networks Association of Australia (ENA) concluded that the demand for traditional Durability Class 1 and 2 utility poles for electricity transmission in Australia will increase by 75% from 2004 to 2014. This increase was projected on the basis of expected network expansions, and inspection, maintenance and replacement programs.

These increases could see demand for poles 8–20 m in length rise from current levels of about 52 000 poles per annum in 2004 to about 87 000 poles per annum by 2014. Projections for other contractor purchasers, in addition to these, could see demand increase to >100 000 poles per annum.

On the supply side, the report noted that the maximum sustainable supply of timber poles from traditional public and private sources appeared constant at about 62 000 poles per annum. These projections result in a widening gap between demand and supply that grows from zero to >40 000 poles per annum over the next 7–8 years.

Options in the short term to meet this demand include use of lower durability species (including softwoods), conversion of existing sawlog allocations to pole allocations (predominately in NSW only), access to new private property supplies, and development of composite products that take advantage of currently under-utilised sizes, and of course alternative, non-timber products such as concrete, steel or other (new) materials. These alternatives all come with different and often more expensive whole-of-life cost profiles.

Timber is the preferred material for domestic poles and can outperform its competitors on a number of performance criteria, including safety because of its insulating nature and compatibility with existing line design and cost. The clear challenge for plantation owners, investors and the timber industry in Australia is to plant Australia's power poles of tomorrow, today.

Large-end-section timbers

Agencies responsible for road and rail bridge assets in each state and territory of Australia continue to face significant inspection, maintenance and replacement challenges associated with their respective populations of aging timber bridges. In NSW alone many of these bridges are heritage listed and of historical significance, thereby limiting the options available to agencies with respect to alternative materials that can be used for their maintenance to ensure continued service.

Despite offering prices for these timbers well in excess of previous market rates, efforts to access the large-end-section, long (9 m and >11 m), naturally durable timbers necessary to repair or maintain these heritage bridges has continued to be unsuccessful. This has prompted the agency (RTA NSW) to investigate a range of possible solutions, including the establishment of purpose-specific plantations of naturally durable timber species.

Of course offsetting any additional costs associated with establishing plantations of durable species presents its challenges, particularly in relation to the need to grow these plantations over the longer rotations necessary to deliver the larger logs required. Nonetheless, the demand is of high value, identifiable and sustainable in the long term, and therefore presents an opportunity that could be met by plantations of durable hardwoods.

External architectural design, screens, cladding, decking, boardwalks etc.

Increased interest in the use of timber for its durable, structural and appearance properties is being identified through developers, specifiers, local councils and parks and gardens and coastal authorities. Residential and commercial building development projects are incorporating more timber in their designs to differentiate final products via the environmentally friendly attributes of timber, as well as to soften the appearance of buildings in the built environment. The suitability of durable timbers in fire-prone areas also lends support to the maintenance and possible re-growth of applications in external decking and boardwalks.

Residues

There has been considerable renewed interest, both domestically and offshore, in forest and timber processing residues over the last few years. Nearly all forest growers in Australia will probably have received some level of enquiry in this regard over the last year, and the prospects of new domestic processing infrastructure appear positive. This trend in interest is expected to continue for the foreseeable future on the back of strategies to reduce greenhouse gas emissions and new product developments for wood fibre in bio-energy, bio-material and bio-fuel applications.

One of the possible benefits of emerging technologies for these new products may be a reduction in the size of the resource traditionally deemed necessary to achieve competitive economies of scale. For example, a matrix of biomass co-generation facilities that each require in the order of 50 000 tonnes per annum (about 5 MW) would better fit the Australian forest geography and timber processing landscape than the 250 000 – 500 000-tonne facilities more traditionally envisaged.

Bio-material and bio-energy research and development continues around the globe, and innovative companies such as DuPont, 3M and others have set ambitious renewable energy and biomass feedstock targets that are expected to drive further innovation and market demand.

There has also been renewed interest in the development of processing facilities for more traditional composite board and timber products such as oriented strand board (OSB) and other stranded composite products. Prospects for the establishment in the near future of domestic processing facilities for these products also appear good, and are traditionally based on resource requirements of 250 000 – 400 000 tonnes per annum. Processes for making these products offer considerable opportunity to use residues from durable hardwood plantations as, unlike in paper production, high pulp yield and light timber colour are not major considerations.

Possible partnerships in durable hardwood plantation establishment

Unmet demand in a number of the above products has induced some companies to consider a more hands-on involvement in the establishment of purpose-specific plantations to secure their required resource.

These companies have a need for the timber products from plantations but are naturally reluctant to extend into greater levels of integration. Rather, they are seeking joint venture partners or service providers to contribute the resources necessary to establish plantations, namely:

1. suitable and sufficient land
2. suitable funding/investment
3. plantation forestry establishment and management services
4. marketing and sales services for plantation products.

Plantation establishment opportunities are currently being explored in NSW that could see three or more parties coming together, each contributing one or more of the above requisites, to extract the benefits from or satisfy needs through plantations over one or more rotations.

Further, in NSW such arrangements have the potential to realise financial benefits associated with generation and sale of greenhouse gas abatement certificates that can further improve the economics of the plantation programs.

For example, in a proposal in which Forests NSW (a registered generator of NSW Greenhouse Gas Abatement Certificates—NGACS) is involved, there could be an opportunity for durable hardwood plantations in a joint venture partnership whereby:

- funding is provided by an electricity utility/retailer that is seeking to secure long-term supplies of durable timber poles to support its sustainable pole maintenance and replacement program, or
- funding is provided by a pole producer (preservative treater and pole manufacturer) that is seeking to secure additional supplies of poles to sell to utilities or other customers
- land held by either of the above parties, or accessed through financial arrangements with a third party, is made available for plantation establishment
- plantation establishment and management services are secured on fee-for-service basis, say from Forests NSW
- marketing and sales services are secured on a fee-for-service basis, possibly also from Forests NSW, for all the plantation log products produced during the rotation.

In this example, parties receive the following benefits:

- the utility or pole producer secures the pole products required to meet expected long-term demand
- the utility or pole producer also receives proceeds from the sale of other log products grown over the rotation

- the utility or pole producer also receives benefits associated with responsible greenhouse gas offsets and potentially financial realisation of value through carbon trading opportunities
- the landholder receives a market rental/lease fee
- the service providers receive fees-for-service and log price discovery opportunities in the marketplace.

Conclusions

Increased market demand (volumes and values) for naturally durable timbers has the potential to make establishment of plantations of durable hardwood species more financially viable and attractive to investors. Additional benefits realised through taxation and possibly carbon mechanisms will help to offset the costs of non-traditional plantations and further assist the financial viability of the plantations.

Further research will be required to develop successful and robust plantation establishment and management models that will account for the species characteristics, longer rotations, pruning and any modified silviculture necessary for plantations of durable species.

Additional research will be required to recognise and understand any modifications of wood properties of durable species that are grown in the plantation environment, and the effect these may have on processing and performance for specific end products. Sapwood-treated poles are an exception, as inspections of poles in long-term treated Durability Class 2 trials have proven conclusively that their performance is at least as good as that of untreated Class 1 poles.

Challenges will continue to exist in identifying and accessing the right land at the right price, with the necessary proximity to processing facilities, infrastructure, markets and possibly port facilities.

The expected domestic housing market recovery in late 2007, as well as increased global interest in the environmental properties of timber, are expected to contribute to increases in overall market demand (volumes and values), but specific demand from specialist markets for durable hardwoods has the potential to offer the best returns.

Key among these specialist markets are those not currently being fully met or that are under development, particularly for round timbers (e.g. poles, piles and girders), large-end-section timbers (e.g. timber bridge components) and products re-constituted from forest and mill residues (e.g. OSB, bio-energy, bio-materials and bio-fuels).

In this sense, considerable opportunities exist to form joint venture partnerships to establish durable hardwood plantations and to involve companies seeking to secure long-term sustainable supplies of high-value durable timber products to meet their ongoing needs.

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